

Docket No. F-8019

Ser. No. 10/699,136

**REMARKS**

Claims 1, and 6-17 are now pending in this application. Claims 1 and 6 are rejected. New claims 7-17 are added. Claims 1 and 6 are amended herein to clarify the invention, to broaden language as deemed appropriate and to address matters of form unrelated to substantive patentability issues.

Applicant herein traverses and respectfully requests reconsideration of the rejection of the claims cited in the above-referenced Office Action.

It is noted that a discrepancy regarding ice cube size in an example given in the specification is amended to maintain conformance with remaining disclosure. No new matter is added.

Claim 6 is rejected under 35 U.S.C. § 112, first paragraph, for allegedly containing subject matter lacking an adequate written description in the specification. Applicant herein respectfully traverses this rejection.

The Examiner's attention is drawn to page 10 of the specification, wherein in the last paragraph (0021) it is stated that "the inner wall of the coil pipes 4 cannot be damaged by ice cubes since ice is softer than the copper coil pipes 4." (Emphasis added). Therefore, applicant respectfully submits that there is adequate support for such claimed feature, and such recitation does not constitute new matter. Reconsideration of the rejection of claim 6 is earnestly solicited.

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Claims 1 and 6 are rejected as obvious over Barry (US 4,724,007) in view of Sameshima (JP01-028625), and further in view of Withers Jr. (US 4,007,774) under 35 U.S.C. §103(a). The applicant herein respectfully traverses this rejection. For a rejection under 35 U.S.C. §103(a) to be sustained, the differences between the features of the combined references and the present invention must be obvious to one skilled in the art.

It is respectfully submitted that a *prima facie* case of obviousness is not established in the rejection of claims 1 and 6. "To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on the applicant's disclosure. *In re Vaeck* , 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." MPEP §706.02(j) "Contents of a 35 U.S.C. §103 Rejection".

The presently rejected claims are directed specifically to a method of cleaning heat exchangers, in which a mixture of ice and water is drawn from a

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hopper through the heat exchange tube(s) by applied suction. It is applicant's position that one skilled in the art would not have the requisite reasonable expectation of success by using the proffered combination of references without application of impermissible hindsight, as explained more fully below.

Barry, while relating generally to the cleaning of tubing in heat exchangers, utilizes propelled pigs which are sized to closely match an interior cross-section of the tubing, such that each pig essentially operates like a high velocity piston driven by pressure behind it, rather than using suction as a driving mechanism. The disclosed invention relies on such intentional dimensioning of the ice, since the functioning of the method requires a pressure build-up on the back of the pig to propel it (see, for example, col. 3, lines 7-20). Because of this sizing, jamming of ice in the tubes is a recognized problem (See, col. 4, lines 27-31), and would therefore preclude the use of mere suction, as opposed to the disclosed high pressure, since even the slightest irregularity of the tube would cause a jam when only a small pressure drop (i.e., between ambient pressure and the applied suction) was present. Therefore, the teachings of Barry cannot effectively be applied to any method teaching the use of suction, for example as disclosed in the Sameshima reference, since its principles of operation are diametrically opposed thereto, and would be counterproductive if altered for use with a suction-operated method rather than a pressure-propelled method. Additionally, there is no instruction or

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suggestion given in the reference as to how ice pigs of the disclosed shape and size could conceivably be automatically transferred from a hopper without outside intervention or assistance merely by the operation of an applied suction, particularly since the disclosed method requires careful loading and positioning of a pig into a tube prior to the applying of propelling pressure behind it.

Moreover, Sameshima, which is cited for its teaching relating to applied suction and a supplied ice and water mixture, relates specifically to cleaning of waste and water supply piping in domestic plumbing. There is no indication that the same fouling agents present in sewer and water lines will have the same characteristics as those encountered in heat exchangers. Hence, one skilled in the art would not have a reasonable expectation of success in cleaning heat exchangers by application of a flushing method relating simply to domestic pipes.

Lastly, Withers Jr. lacks any disclosure providing the requisite motivation for combination of the references that is missing from both Barry and Sameshima. Thus, applicant respectfully submits that the Examiner is applying impermissible hindsight in making the combination upon which the rejection is based.

Thus, it is respectfully submitted that the rejected claims are not obvious in view of the cited references for the reasons stated above. Reconsideration of the rejections of claims 1 and 6 and their allowance are respectfully requested.

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Claims 7-17 are added and are submitted as patentable over the cited art of record. Independent claim 13 recites subject matter directed to a method of cleaning a heat exchanger having at least two coil pipes interconnecting an inlet header and an outlet header, including supplying an ice and water mixture via a hopper into a one of the inlet and outlet headers, and applying suction to a remaining one of the inlet header and the outlet header, so that the ice and water mixture is suctioned into the remaining one of the inlet and outlet headers to simultaneously pass internally through the coil pipes, which, among other features recited therein, is not believed disclosed in the cited art in the manner as claimed. Dependent claims 7-12 and 14-17 are patentable based on the subject matter recited therein in addition to the subject matter of claims 1, 6 and 13.

The USPTO is hereby authorized to charge any fee(s) or fee(s) deficiency or credit any excess payment to Deposit Account No. 10-1250.

In light of the foregoing, the application is now believed to be in proper form for allowance of all claims and notice to that effect is earnestly solicited.

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